Evaluating the Completeness of External Cause of Injury Codes in the VDW

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Background

External cause of injury ICD-9 codes (Ecodes) should be reported for any encounter with an ICD-9 injury diagnosis. Ecodes are important for the mental health research because the Ecodes for self-harm are a way to identify suicide attempts. A 2004 report by AHRQ found rates of Ecoding were high but varied by state between 85.0 and 99.1 percent (Table 1.)

We did a similar analysis to the AHRQ study using 2009 VDW data in order to evaluate the quality of Ecode recording in the MHRN and our ability to capture suicide attempts. One of the first MHRN research projects, Longiturdinal Analysis of SSRIs and Suicidality in Youth, is evaluating changes in rates of suicide attempt before and after the FDA added a black-box warning concerning pediatric suicidal behavior to all antidepressants. Therefore, we also examined the completeness of Ecode recording over an 8 year period, 2003-2010, including the use of code V62.84, introduced in 2005, for suicide ideation, in combination with an injury code.

Table 1. HCUP 2001 Ecode Completeness by State					
State (limited to those represented in MHRN)	% inpatient injury discharges with Ecode	State has mandate/ regulation	State enforces mandate/ regulation		
California	95.0	Y	Y		
Colorado	99.1	N	_		
Georgia	94.2	Y	N		
Hawaii	60.4	N	_		
Massachutsetts	98.6	Y	N		
Michigan	85.5	Ν	_		
Minnesota	85.0	Ν	_		
Oregon	87.9	Ν	_		
Washington	97.3	Y	Y		

Methods

The MHRN VDW workgroup consists of ten HMOs: Group Health, Harvard Pilgrim Health Care, Health Partners Research Foundation, Henry Ford Health Systems, Kaiser Permanente Colorado, Georgia, Hawaii, Northwest, Northern California, Southern California.

We attempted to match the AHRQ analysis, using the VDW (v2 and/or V3, depending on site) utilization and diagnosis datasets. Table 2 shows the crude rates of Ecode use in 2009 encounters with an injury code as the primary diagnosis, by encounter type.

We also used defined a narrower range of injury codes relevant to self harm, as determined empirically by looking at injuries associated with self-harm Ecodes at two sites, which consisted primarily of poisoning and wound injuries (Table 2). The second analysis was also repeated for years 2003-2010, and is shown in Figure 1.

Figure 1. Rate of E-code (or V62.84) recording in ED encounters with a poisoning or wound injury as the primary diagnosis

	1	_
	0.9	_
СU U	0.8	_
code	0.7	_
e/v	0.6	_
with	0.5	_
ion	0.4	_
ractior	0.3	_
ш	0.2	_
	0.1	_
	0	_
	2	20

Table 2. MHRN 2009 E-code Completeness in Encounters with Injury as Primary Diagnosis, by Site							
	Any injury code (Range)		Injury codes associated with Self-harm Ecodes				
Site	% inpatient encounters with Ecode	% emergen- cy (ED) en- counters with Ecode	% inpatient encounters with Ecode	% emergen- cy (ED) en- counters with Ecode			
GH	45.4	26.5	57.5	30.1			
Q	64.0	87.3	74.6	89.1			
R	3	62.8	4.4	62.0			
S	26.9	59.4	24.0	69.5			
Т	26.1	<5	35.2	<5			
U	24.4	25.4	26.8	27.6			
V	53.1	51.1	59.9	50.5			
W	64.1	55.2	62.1	55.8			
X	94.0	91.1	93.1	93.6			
Y	1.6	6.4	2.7	10.8			

*Poison and wound injury codes (range)



Site U changed to an alternative data source for ED claims

Group Health implemented electronic medical record in EDs in 2009

Results

Ecode use for any injury code during an inpatient encounter varied between 1.6 and 94.0 percent at MHRN sites. Emergency Department (ED) use was between 5.0 and 91.1 percent. When restricted to encounters likely associated with self harm, inpatient use of ecodes was between 2.7 and 93.1 percent; ED use was between 5.0 and 93.6 percent.

Discussion

In general, we reported much lower rates of recording e-codes than reported in previous studies. We also found a great deal of variability between MHRN sites. Limiting the range of injury codes to those relevant to self-harm increased completeness a small amount in most cases. Variation in Ecode use over time is considerable and poses a problem for conducting longitudinal analyses designed to measure changes in suicide attempts over time at many sites (e.g., in relation to any suicide prevention strategy or medication policy).

 Why might e-codes be incomplete? Some possibilities: Ecodes are less relevant for claims payment, so billing software might not retain this information. Ecodes may not make it into the VDW, whether or not they are stored like other diagnosis codes in the source systems. Recording practice may vary, due to state regulations, health plan policies, or clinical software.

Conclusion

Examining project data over time for complete quality-control is essential. It's a rare health care delivery system that does not change some portion of its data management systems over a five-year period. Examining multisite data by site is essential because the aggregate may look reasonable but hide considerable discontinuities.

References:

Healthcare Cost and Utilization Project (HCUP) Ecode Evaluation Report Report # 2004-06



MHRN Mental Health Research Network

Rates of Ecode use fluctuated greatly over the 8 year study period. Use of Ecodes increased greatly at some sites; however, rates also decreased significantly at some sites. Temporal patterns did not change significantly when the analysis was limited to injury codes associated with self-harm.

- We also repeated the analysis for the population who have a mental health diagnosis in 2009, and found very little difference (not shown.)
- We also examined V62.84, a code introduced in 2005 for suicide ideation (not shown.) In combination with an injury code it is a valid predictor of suicide attempt but added a very small number of cases not otherwise identified. Also, its introduction did not seem to influence the use of self-harm Ecodes.
- Next steps for VDW workgroup: investigate system and data-source changes that may account for variation over time and/or low rates of Ecode recording.
- Next steps for SSRI project: consider using a subset of sites or a different method for measuring self-harm injuries that is consistent over time.